**Operating Systems**

**What is operating system?**

* It is a software that allows users to communicate with the hardware.
* It is an essential software which is required to perform basic low level programming.
* Its can be used to perform tasks such a scheduling tasks and controlling peripherals.

***"An operating system (or 'OS') controls the general operation of a computer, and provides an easy way for us to interact with computers and run applications."***

**BBC Bitesize. (2018). *BBC Bitesize - GCSE Computer Science - Operating systems - Revision 1*. [online] Available at: https://www.bbc.com/bitesize/guides/ztcdtfr/revision/1 [Accessed 16 Nov. 2018].**

* Software that allows users to communicate with the hardware
* Essential software
* Low level programming

**Services -**

* Context switching & Scheduling
* Memory Management
* Interprocess Communication

**File extension -**

* .exe
* .mp3
* .docx
* .txt
* .pdf

**Types of operating Systems -**

* Desktop
* Server / Network
* Mobile
* Embedded Systems

**Types of operating System in desktops -**

* Windows
* Mac
* Linux
* Unix

**Windows** -

* 10
* 8.1
* 8
* 7
* Vista
* Xp (Experience)
* ME (Millennium Edition)
* Windows 2000 Workstation
* 98
* 95
* MS-DOS

**Servers -**

* Server 2016
* Server 2012
* Server 2008
* Server 2003
* Server 2000
* NT (New Technology)

**Purpose, use, type and hardware requirements of an Operating Systems -**

* **Types of OS in Desktop -** acts as an intermediary between program.
* **Windows -** 10,8.1,8,7,vista,Xp,ME,Windows 2000,98,95,MS-DOS
* **Mac -** macos 10.14,10.13,10.12 OS X 10.10,9,8,7,6,5,4,3,2,1,0
* **Linux -** Ubuntu, Arch Linux, Fedora, Ubuntu MATE, Kubuntu...
* **Unix -** SunOS, Solaris, SCO UNIX, AIX, HP/UX, ULTRIX**.**
* **Types of OS in Server/Network -** it provides service to the client.
* **Windows -** Server 16,12,08,03,2000,NT
* **Mac -** Mac OS X server 10.0,10.2,10.3,10.4,10.6,10.7,10.8,10.9
* **Linux -** Ubuntu Server, openSUSE,oracle Linux, CentOS, Mageia
* **Unix -** Ultrix, BSD unix, SCO unix, AIX, IRIX, Solaris
* **Types of OS in Mobiles -** it provides a better interface for the user
* **Android OS -** Oreo, Nougat, Marshmallow, Lollipop, Kitkat, jelly Bean
* **Apple iOS -** iOS 5, iOS 6, iOS 7, iOS 8, iOS 9, iOS 10, iOS 11, iOS 12
* **Windows OS -** Windows CE 1.0,2.0,Pocket PC 2000,2002,2003,5.0
* **BlackBerry OS -** Classic, Passport, Priv, DTEK50, Motion, KEYone
* **Embedded Systems -** integrated within the system
* FreeDOS, Juno OS, Xinu, TinyOS, LynxOS, VxWorks, Palm OS, eCos

**Hardware Requirements of OS in Desktop -**

* **Windows - 10**

**Processor :** 1 gigahertz(GHz)

**RAM :** 1 gigabyte (GB) (32-bit) or 2GB (64-bit)

**Hard Disk Space :** 16 GB

**Graphic Card :** Microsoft DirectX 9 graphics device with WDDM driver.

* **Mac -** **10**

**Processor :** 2 GHz Intel Core i5 (OS X 10.8 or later)

**RAM :** 2GB of memory

**Hard Drive Space :** 12.5 GB of available storage (OS X El Capitan 10.11.5 or later)

**Graphic Card :** Mac Pro ( Mid 2010) and Mac Pro (Mid 2012)

* **Linux - Ubuntu**

**Processor :** 2 Ghz dualcore processor

**RAM :** 2 GB (system memory)

**Hard Drive Space :** 25 GB of hard drive space

**Graphic Card :** 3D Acceleration, Video-card with at least 256 MB.

* **Unix - AIX**

**Processor :** Configured POWER5 or later (64-bit)

**RAM :** 2GB

**Hard Drive Space :** 7.5GB

**Chipset -**

Chipset control the follow of data with all the device in the motherboard. input output devices, RAM Graphics cards, CPU.

**They are made out of 2 bridge -**

**North bridge -**

Deal with faster devices on the PC , Ram , CPU

Connection with the motherboard and north bridge is called north side bus.

**Southbridge -**

Communicates with Hard drives, pci, input output ports (USB ports), network card.

**Connection -**

It is connected to the north bridge with a DMI which is connected to the south bridge and south ridge is connected to the processor.

**Features of an Operating System -**

* **File Management -**
* Operating system helps in managing files and organizing them in separate folders where the CPU can locate it easily.
* **Provides user interface -**
* Users can easily interact with the system as the operating system allows them to do so with simple to use interface.
* **Hardware Adaptability-**
* It can adapt to different hardware system without causing any problems to the CPU and is compatible with various systems.
* **Memory Management -**
* Operating system manages memory by allocating different memory segments to carry out specific tasks properly.
* **Task Management -**
* It manages task by distributing the workload to limited amount of memory in the CPU to run a smooth as possible without any issues to the system itself.

**Services of an Operating System -**

* **Memory Management -**
* Different programs and data execute in memory at on time, if there is no operating system, the programs may mix with each other.
* **Disk Management -**
* Operating system manages the disk space. It manages the stored files and folders in a proper way.
* **Booting -**
* Booting is a process of starting the computer operating system. It checks the computer and makes it ready to work.
* **Device Controlling -**
* Operating system also controls printing function. it does not mix data of these files, if two commands run at the same time.
* **Process Management -**
* CPU can perform one task at one time, if there are many asks, operating system decides which task should get the CPU.
* **Loading and Execution -**
* A program is loaded in the memory before it can be executed. Operating system provides the facility to load programs in memory easily and then execute it.
* **Data Security -**
* Data is an important part of computer system. The operating system protects the data stored on the computer from illegal use, modification or deletion.
* **Providing Interface -**
* It is used in order that user interface acts with a computer mutually. User interface controls how you input data and instruction and information is displayed on screen.

**Analysis of services by an Operating System -**

* **Make sure the operating System is good for you -**
* It is best to do your research on what operating system is good for you and for what would you use it for .
* **Cost of the Operating System -**
* There are a lot of operating systems out there of your choice, it is up to your preference whether you would benefit out of it .
* **Advantages / Disadvantages -**
* There a ups and downs with different operating systems out there, the only way to decide on what operating is better for you is to focus on the application you want it for, red the reviews and ask around.
* **OS over System -**
* At the end of the day it’s all about the OS you are running on as it a personal preference of the user and they enjoy it or not.